

the other is a new species of *Cryptomeriopsis*, the generic name suggesting the reputed affinity. A new fungus is also described, parasitic on the shoots of *Cryptomeriopsis*, and is referred to the Pyrenomycetes as a new genus (*Pleosporites*).

FUJII<sup>40</sup> has followed SUZUKI's paper with a short discussion of the features of the cretaceous flora of Japan so far as uncovered, and especially contrasting it with the results of HOLLICK and JEFFREY in the United States. He announces a change of opinion as to the affinities of *Yezostrobus* and *Yezonia* (STOPES and FUJII 1910), being convinced now that this strobilus and stem, whether they belong together or not, are to be associated with the araucarians. The discussion of the causes of extinction is preliminary and suggestive rather than definite, attention being called to the influence of such factors as parasitic fungi, injurious gases from volcanoes, climatic changes, "inherent characters," etc. Even the cytological situation is included, the fluctuating numbers of chromosomes in angiosperms and their fixed number in gymnosperms suggesting a relation to the variability and hence adaptability of the former group, and the fixity and decadence of the latter group.—J. M. C.

**An ecologist's garden.**—A botanical garden of a new type, situated on Mount Aigoual, a peak of the Cevennes, and due largely to the foresight and energy of Professor FLAHAULT, has recently been described by SKENE.<sup>41</sup> The situation seems almost ideal for the study of many ecological problems, as it lies between the Atlantic and Mediterranean basins, with an elevation that permits the mesophytic vegetation of the former to thrive within a few miles of the xerophytic plants of the latter region. The presence and proximity of calcareous, siliceous, and granitic soils add to the value of the region for experimental purposes. In addition to the garden proper (800 feet below the summit), there is a plot at the very top of the mountain, and a bog which forms the source of a stream.

Since the founding of the garden (known as "L'Hort de Dieu") in 1903, a laboratory capable of sheltering a dozen people has been erected, and several thousand seedling trees and shrubs have been planted. Trees from all parts of the earth are being grown, in order to find those most suitable for forestry purposes in southern France, and to solve such ecological problems as the factors which limit tree species at certain altitudes. Not only the garden but the entire mountain is being made one gigantic ecological experimental plot.—GEO. D. FULLER.

**Leaves of Calamites.**—THOMAS<sup>42</sup> has undertaken an investigation of the leaves of certain species of *Calamites*, to obtain from their structure indications

<sup>40</sup> FUJII, K., Some remarks on the cretaceous fossil flora and the causes of extinction. Bot. Mag. Tokyo 24:197-220. 1910.

<sup>41</sup> SKENE, MACGREGOR, An ecologist's garden. New Phytol. 10:64-68. 1911.

<sup>42</sup> THOMAS, H. HAMSHAW, On the leaves of *Calamites* (CALAMOCLADUS section). Phil. Trans. Roy. Soc. London B 202:51-92. pls. 3-5. 1911.

of their environment. In short, it is a study of the ecological anatomy of fossil leaves. The leaves of *Calamites* are mostly known as impressions, and THOMAS has referred the structures he has been able to obtain to the better known impression forms. The petrified material used was obtained from the Lower Coal-measures (Halifax Hard Bed), and five types of leaf were distinguished. The twigs bearing the leaves proved to be quite interesting in stelar structure, especially in its relation to that of young stems of *Equisetum*.

The ecological conclusion is as follows: "The leafy twigs seem to have grown in a pendulous fashion, and the structure of the mesophyll and epidermis suggests that the habitat was a damp one. On the other hand, the leaves possess some xeromorphic features, such as the presence of fibers in the longer forms. The evidence points to a marsh or swamp forest as their habitat; this may have been near the sea, but if so the soil probably contained little salt."—J. M. C.

**Transpiration in salt marsh plants.**—Transpiration rates of cut shoots of *Salicornia annua* and *Suaeda maritima* have been found by DELF<sup>43</sup> to be equal to or greater than those from equal surface areas of such mesophytes as *Vicia Faba*. The highest degree of succulence seemed to be accompanied by the highest transpiration rate per unit area. Relating transpiration to evaporation from a water surface, unit areas of *Salicornia* lost 32 per cent and of *Vicia* 26 per cent as much water as equal areas of water surface. It was shown that *Salicornia* is able to absorb water readily through the surface of its stems when submerged, and less convincingly that it does not absorb sufficiently through its root system to replace the loss by transpiration except in a humid atmosphere. This seems the more surprising, since TRANSEAU<sup>44</sup> has shown evaporation to be exceptionally high in salt marshes. The stomata in *Salicornia* and *Aster trifolium* appear to have distinct powers of movement in young plants early in the season, losing this plasticity at a later date.—GEO. D. FULLER.

**Cytology of the ascus.**—An account of the cytology of *Helvella crispa* Fries is given by Miss CARRUTHERS.<sup>45</sup> The cells of the hypothecium are one to several-nucleate, and some of the nuclei were observed to fuse in pairs, but no migration was observed like that in *Humaria*. An attempt was made to determine the number of chromosomes on the spindles in the vegetative hyphae. Apparently two chromosomes are present in the vegetative spindles, and four or eight on the spindles in the fertile hyphae, but owing to the minuteness of the objects not much importance can be attached to these observations. The

<sup>43</sup> DELF, E. MARION, Transpiration and behavior of stomata in halophytes. *Ann. Botany* 25:484-505. 1911.

<sup>44</sup> BOT. GAZ. 45:217-231. 1908.

<sup>45</sup> CARRUTHERS, D., Contributions to the cytology of *Helvella crispa* Fries. *Ann. Botany* 25:243-252. pls. 2. 1911.